

Remarks

Applicants understand the Examiner withdrew the rejections under 35 USC §112 but maintained his rejections of claims 20, 21, and 24-26 under 35 USC §103 as being obvious over EP 1 037 041 A2 ("041 patent") in view of U.S. Patent No. 4,272,353 to Lawrence or U.S. Patent No. 6,319,293 to Debe et al. Based on the foregoing amendments and following remarks, Applicants submit all claims should be allowed.

As amended, all claims relate to an ionomer membrane that is dry during the steps of providing the at least one opening in the substrate that extends from a first outermost surface to a second outermost surface, placing the electrode proximate to the at least one opening, and contacting the dry ionomer membrane to the substrate and electrode, wherein, the ionomer membrane is dry during the steps of providing the at least one opening in the substrate, placing the electrode proximate to the at least one opening, and contacting the dry ionomer membrane to the substrate and electrode.

The Examiner seems to rely upon the '041 patent for showing Applicants' claimed sensor while Debe and Lawrence are each relied upon to show the ionomer membrane is dry during sensor construction. For the following reasons, the '041 patent does not disclose a sensor having an opening extending from a first outermost surface to a second outermost surface. In addition, Applicants submit neither Debe nor Lawrence teach or suggest this limitation.

The previous office action states that the '041 patent's substrate is porous and therefore an opening is in the substrate. However, pores are not openings that extend from a first outermost surface to a second outermost surface of the membrane, as claimed by Applicants.

Applicants concede that pores must start at one area and extend to a second area, but these are not surfaces. Therefore, the '041 patent's pores do not extend, and are not taught or suggested to extend, from any face or exterior boundary to another face or exterior boundary. The '041 patent does not have an opening that extends from the first outermost surface to the second outermost of the substrate.

The previous office action states that the '041 patent never specifies whether the membrane is wet or dry during sensor construction and the office action appears to rely upon the other references to infer a membrane that is dry during sensor construction. However, as shown below, neither Debe nor Lawrance teaches or suggests an ionomer membrane that is dry during the steps of providing the at least one opening in the substrate, placing the electrode proximate to the at least one opening, and contacting the dry ionomer membrane to the substrate and electrode.

As stated in the Advisory Action, Debe's membrane is wetted then dried. Col. 25, lines 20-25. However, Debe does not teach or suggest the ionomer membrane is kept dry during the step of providing the at least one opening in the substrate that extends from a first outermost surface to a second outermost surface, placing the electrode proximate to the at least one opening, and contacting the dry ionomer membrane to the substrate and electrode. In fact, even assuming that Debe's membrane is dry during the membrane electrode assembly, and Applicants are not conceding this, Debe lacks any teaching or suggestion for an opening in the substrate that extends from a first outermost surface to a second outermost surface. Debe also lacks any teaching or suggestion for placing an electrode proximate to the opening. Therefore, Debe cannot relate to the ionomer membrane being dry while this opening is provided or for placing the electrode proximate to such an opening.

-Lawrance is relied upon to show that the ionomer membrane is drying during sensor construction. Even assuming that Lawrance's membrane is dry during the mem-


brane electrode assembly, and Applicants are not conceding this, Lawrance lacks any teaching or suggestion for a substrate or an opening in the substrate that extends from a first outermost surface to a second outermost surface. Lawrance also lacks any teaching or suggestion for placing an electrode proximate to the opening. Therefore, Lawrance cannot relate to the ionomer membrane being dry while this opening is provided or for placing the electrode proximate to such an opening.

In view of the above arguments, none of the references teaches or suggests an opening in the substrate that extends from a first outermost surface to a second outermost surface, an electrode proximate to the opening, and an ionomer membrane that is dry during the steps of providing the at least one opening in the substrate, placing the electrode proximate to the at least one opening, and contacting the dry ionomer membrane to the substrate and electrode.

A prima facie case of obviousness requires that the Examiner show that the proposed combination teaches all of the claimed elements, that there is motivation for the combination, and that there is a reasonable expectation of success for the combination. Because no reference alone or in any combination with one another relates to an opening extending from a first outermost surface to a second outermost surface and an ionomer membrane that is dry during the steps of providing the at least one opening in the substrate, placing the electrode proximate to the at least one opening, and contacting the dry ionomer membrane to the substrate and electrode, the proposed combination cannot include these limitations. When no reference refers to such claimed features, the motivation to combine the stated references in a manner to include Applicant's claimed feature is also absent. The reasonable expectation of success prong is moot given the failure of the "all-elements" and motivation prongs.

Based on the foregoing, Applicants' submit that all claims are allowable and that all rejections be withdrawn.

Respectfully submitted,

3 October 2020 

Wesley W. Whitmyer, Jr., Registration No. 33,558
David Chen, Registration No. 46,613
Attorneys for Applicants
ST.ONGE STEWARD JOHNSTON & REENS LLC
986 Bedford Street
Stamford, CT 06905-5619
203 324-6155